

THE BIOLOGIST



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PHI SIGMA SOCIETY

An Organization Devoted to the Promotion of Interest in Research
in the Biological Sciences, Founded Ohio State
University, March 17, 1915.

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ALEXANDER G. RUTHVEN
President of the University of Michigan
Director of the University Museums
Honorary National President of Phi Sigma

Photograph taken in old Museum Building by A. I. Ortenburger.

THE BIOLOGIST

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PRESIDENT OF THE UNIVERSITY OF MICHIGAN ELECTED NATIONAL HONORARY PRESIDENT OF PHI SIGMA

Dr. Alexander G. Ruthven, President of the University of Michigan, has attained an international reputation as a scientist. He is one of the leading authorities in herpetology and has published well over a hundred papers pertaining to this branch of zoology. His revision of the garter snakes (*Thamnophis*) presented an entirely new viewpoint and method to science, one that is increasing in just recognition, and wider application. Doctor Ruthven's recent scientific work has been confined largely to the genus *Anolis*, which includes the Chameleons.

The President of the University of Michigan has been in charge of scientific expeditions throughout this country, Mexico, Central America, and South America. Doctor Ruthven has published many papers on the scientific results of these expeditions.

Training as a Zoologist is evidenced by those who know him best in his remarkable ability to pierce beyond the superficialities of a problem and penetrate the main issue. He excels as an administrator and his farsightedness has always produced results undreamed of by his associates. His ability to realize

his visions is evidenced in the new Museums Building, of which he is justly proud.

Doctor Ruthven experiments with many problems intimately concerned with museums and their work. Recently he has built a University Zoo and has gone to considerable pains in experimentation on methods of museum display case illumination.

Doctor Ruthven is an unassuming man, always approachable. He finds relaxation from his administrative duties with his collection of rare books and his Scotch terrier dogs.

Doctor Ruthven received his Bachelor's Degree from Morningside College, Iowa, in 1903. Three years later he received his Ph.D. from Michigan. At the University of Michigan he has served as Instructor, Museum Curator, Assistant Professor, Professor, Dean of Administration, and Chairman of the Zoology Department. He was installed as President October 4, 1929.

Numerous societies have honored him with membership. He is affiliated with Sigma Xi, Gamma Alpha, London Zoological Society, Society of American Zoologists, American Society of Naturalists, British Association of Museums, and many other zoological and biological societies.

In honoring Doctor Ruthven by election to our Honorary Presidency, Phi Sigma likewise honors itself.

CHAPTER REPORTS

BETA

University of Michigan

CHAPTER NEWS

This year has seen a marked improvement in the interest and activities of Beta Chapter. Much of this is due to the excellent programs which have been given, and to the fine group which has been added to our membership list at an initiation banquet held in January. At that time our membership was increased by the following initiates: Faculty members, Dr. Chester A. Arnold, Botany Department, and Mr. William P. Harris, Museum of Zoology; active members, from the Zoology Department, Misses Elsie Bauchman, Edith Kauffman, Helen Monroe, and Esther Whitney—Messrs. David Chandler, Richard Deno, Wilbur Gorham, Paul Guernsey, and Donald Miller; from the Botany Department, Misses Catherine Dziurewicz, Minnie Hilton, Esther Rodger—Messrs. Perry Austin, Kenneth Jones, and Clarence Porter; from the Forestry School, Messrs. Clayton Scribner and Newell Norton; from the Bacteriology Department, Miss Ruth Richardson.

At the present time our chapter roll includes 35 active members. Another group will be added at a banquet to be held early in May. At that time our University President, Dr. Alexander G. Ruthven, will be initiated as an honorary member.

The present policy of Beta Chapter is to meet every other week on Thursday evenings. On alternate meetings the speaker is a faculty member who tells of some phase of his work. These meetings are open to anyone who is interested. The programs for the intervening meetings are featured by one or two talks by members of the Society concerning their research problem. Some of the subjects of recent meetings are as follows: "The Forest Policy and Some of Its Problems" by E. R. Martell, who has spent three years in Government Forest Service in the South and Southwest; "Some Problems Concerning Fresh-water Crustacea" by E. P. Creaser; "Fresh-water Sponges" by M. C. Old, who has spent some time in an ecological and taxonomic survey of sponges in Michigan; "Life History Studies of Some Trematode Parasites" was the subject of an illustrated talk by Miss Nelly Bosma; "Physiological Studies on an Undescribed Species of Splitting Yeast" by Kenneth

Jones; and "A Management Plan for the Manti National Forest" by C. W. Scribner.

At the Michigan Academy of Science meetings, March 19-22, papers were presented by many of our members.

Our President, E. P. Creaser, left Ann Arbor about the first of April for a two months collecting trip through Mexico in company with Dr. Myron Gordon, National Research Fellow from Cornell. The trip is sponsored by the University of Michigan Museums, and the aim is to obtain not only a collection of preserved fishes and crustaceans, but also many live fish which will be sent back to Ann Arbor by making use of thermos jugs. Their route is by way of Laredo, Texas.

On April tenth, Beta Chapter sponsored a travel lecture and moving picture by Dr. Richard Sutton before a large audience in the Natural Science auditorium. Doctor Sutton was President of our chapter in 1928-1929 and received an M.D. from Michigan, June, 1929. Two weeks after graduation he sailed from New York with his father to spend the next six months big game hunting in Africa and Indo-China. Many kinds of wild beasts fell before their rifles and considerable effective work was done with cameras and especially good motion pictures were taken of animals near the headwaters of the Nile. In French Indo-China the Suttons were accompanied by the world famous guide, Defasse, who has led two generations of Roosevelts through the tiger country. Homeward bound they traveled via Hongkong and Yokohama, arriving in Seattle, February eighth. Since his return Doctor Sutton has given an illustrated talk of the trip before large audiences in several cities. Beta Chapter was indeed glad of the opportunity to present its former President.

EVELYN DRESSEL.

DELTA

University of Maine

At the first meeting of Delta Chapter of Phi Sigma at Orono, Maine, Dr. Donnell B. Young, head of the Biology Department spoke on "What Part the Phi Sigma Society Can Play on the Campus". In November we held our fall initiation at which time we received into active membership twelve student and four faculty members. At the banquet the following evening Mr. Hitchner gave us an interesting talk on "The Evolution of the Medical Doctor".

In December we had a wonderful Christmas meeting at which time Dr. Edith M. Patch who is the Entomologist at the Maine Experiment Station, gave us a highly instructive and entertaining talk on her experiences with Snow Buntings.

At the January meeting in 1930, Dean Achsa M. Bean gave us a talk on her Master's thesis on "The Abnormalities in the Feet of Mice Due to X-Ray".

We took into membership at the March meeting seven more active student members. This makes our present roll-call total sixty members, faculty, experiment station, and students.

In the February meeting previous to the last one mentioned, after voting on our new members, Doctor Steinmetz gave us the results of Kenneth Brown's research problem on "Carnation Rust—its Causes and Cures".

Several of our active student members are now engaged in research problems. Anthony Pelletier, a Pre-Medic student, is working on a problem in blood pressure, under Doctor Rice. Elmer Hodson is interested in the Japanese Beetle situation. Miss Eunice Copeland is engaged in an extended piece of work concerning anemia in rats its causes and cures. Horace Caler is engaged in entomological research. Arthur M. Gillespie has done quite a bit of research at Bar Harbor for the Maine Forest Service. Others of our members among the student body who are engaged in research are Kenneth Haskell, Lawrence Boothby, William Roche. Cyril Hutner is very much interested in cancer research.

Among our Alumni who are making a worthy contribution to the world of Science is Dr. Clarence C. Little who is doing extensive research in cancer with mice at Bar Harbor. Dr. Edith M. Patch has recently been elected to the Presidency of the National Entomological Society. Abraham Rubin is working on the problem of Undulant Fever on the campus. Miss Elizabeth Sawyer is now an instructor in biology at this University. Paul Giddings is likewise employed here. Miss Sadie Thompson is biology teacher at Old Town High School, Maine. Everett Conlogue and Winfield Niles are studying at Boston University Medical School. Edward Kelley is studying at the City College, New York City. Miss Elizabeth Murphy is teaching in the Shedd Memorial High School at East Port, Maine.

The Chapter is a live one and our prospects for the future look bright. We are planning a Pre-Medic Night—a Field Trip to Bar Harbor—and are now engaged in the election of our new officers.

PHYLLIS GOULD.

EPSILON

University of Denver

The present school year has been thus far a very busy one in Epsilon Chapter of Phi Sigma. Up to date we have taken in 20 members, two of which are honorary. The Honorary members are Harold J. Cook and Robert J. Neidrach.

The Active members are Paul Beaubien, Eleanor L. Hearon, Elnor L. Keplinger, Patricia A. Large, Charles H. Mellish Jr., Charlotte G. Morell, Charles L. Reinert, Albert H. W. Spute, Lloyd F. Bailey, Theodore Becker, Ruth Large, Milton Molien, Frances E. Shattuck, Harry W. Shankel, Charlie R. Steen Jr., Vernon W. Taylor, Herbert S. Wallace, Vera E. Wurl.

We would like to make special mention of our two new Honorary members, Mr. Cook and Mr. Neidrach, both of whom are employed at the Colorado Museum of Natural History here in Denver. Mr. Neidrach is Curator of Ornithology. He prepares and sends out the exhibits for the Public Schools of Colorado. He is an authority on birds and is in great demand for illustrated lectures. Mr. Cook is Curator of Paleontology at the Museum. He is engaged much of the time in directing excavation work in northwest Nebraska. Some very interesting and important discoveries have been made by him. He gives most interesting illustrated lectures on his work, showing the reconstructed animals found, as well as other subjects.

Miss Frances Watkins who majored in archeology and assisted in that department last year is now doing splendid work as Assistant Curator of Archeology in the Southwest Museum at Los Angeles.

Mr. Arthur Coole is here on a furlough from his teaching work in China preparing for his Master's Degree. His thesis subject is "The Geography of China". He is preparing it in book form, to be published soon and to be used as the text-book for his work when he returns to China.

The Botany Department of the University of Denver is buying a plot and preparing to establish a Botanical Garden. It will not be a cultivated garden, but one of natural growth of the plants native to the chosen plot. Nothing will be added and nothing taken away; observations will be made of the succession of plants from season to season, and from year to year and their growth relation to sunlight, temperature, and moisture.

Donald Spencer, class of 1926 of the University of Denver, has made remarkable strides in his work as Junior Biologist of the U. S. Biological

Survey. He spent eight months of the past year in the work of exterminating rats. He was put in charge of the territory lying southeast of Fort Worth, Texas. An intensive campaign of six weeks was inaugurated in Bell County during which 315,000 rats were exterminated. His success was so marked in obtaining the cooperation of the citizens of Texas, and the results were so telling, that he was placed in charge of 56 counties with headquarters at San Antonio.

This year has been granted to Mr. Spencer for further study and at present he is in the University of Chicago, earning his Master's Degree.

ETHEL GLANDON.

ZETA

University of Wisconsin

Under the leadership of President R. G. Shands, the present year has been a most pleasant and profitable one for Zeta Chapter of Phi Sigma. A variety of programs and events were planned which were very well attended and a spirit was manifested which can only mean a bright future for Phi Sigma at Wisconsin.

HONORARY MEMBER VISITS WASHINGTON AND WEST INDIES

Dr. L. R. Jones, Chairman of the Department of Plant Pathology of the University of Wisconsin and an honorary member of Zeta Chapter of Phi Sigma recently made an important trip to Washington and the West Indies. Doctor and Mrs. Jones, accompanied by Dean H. L. Russell of the College of Agriculture, left early in February for a month's trip in the interest of Forestry and Tropical research. Duties as President of the Tropical Plant Research Foundation took Doctor Jones to the West Indies and about two weeks were spent at San Juan, Porto Rico, San Domingo, and Haiti in the investigation of the current problems of the Foundation. Upon their return to Washington Doctor Jones participated in the Tropical Plant Research Foundation and Forestry conferences held there. Doctor Jones is Chairman of the Committee on Forestry Research of the National Academy of Sciences.

EUROPEAN TOUR OF DR. L. R. JONES

Sailing on May 3, Dr. and Mrs. L. R. Jones will tour much of the European Continent and England, Doctor Jones in the interest of plant disease problems and Mrs. Jones in the interest of educational policies and methods. The trip will be by way of Germany, from there they will

immediately embark for Leningrad, the scientific center of Soviet Russia, where the laboratories of Doctors Jaczewski, head of plant pathology of the Russian Government and one of the few hold-overs from the Czarist Regime, and Vavilov, geneticist, will be visited. Proceeding to Moscow for a brief stay the journey will then continue to the Ukrainian grain region. There they will join Dr. J. G. Dickson, associate Plant Pathologist with Doctor Jones at Wisconsin, for an inspection visit of those regions searching for disease-resistant cereals.

By way of the Black Sea and Constantinople some time in early June, they will turn back to Sofia, Bulgaria, where one of the Wisconsin Alumni, Doctor Atanasoff, present head of plant pathology work in Bulgaria, is situated and at present enjoying fine new laboratories supported by the Rockefeller Foundation. Going north through Jugo Slavia, they will be the guests of another of Doctor Jones's former students, Doctor Skoric, who is Plant Pathologist at the Zagreb Forestry School. Journeying via Vienna to Berlin, Germany, the next four weeks (during July) will be spent visiting research centers of Central Europe and Scandinavia. Doctor Jones will devote special attention to the organization and methods, more specifically, as these relate to possibilities of developments in forestry research in the United States. Doctor Jones, as Chairman of the Committee on Forestry Research, National Academy of Sciences, is much interested in this aspect of pathology. The committee with which he is working is active and is, through him, extending its investigations into Europe in the hope of further advancement.

In August they will go on to England visiting Rothamsted and other research centers. Finally they will attend the Fifth International Botanical Congress at Cambridge, August 16 to 23. As President of the Section of Mycology and Plant Pathology, Doctor Jones will open the session with a discussion on "The Effect of Environment on Disease". This discussion will be continued by Dr. J. G. Dickson who shall give the results of some recent work at Wisconsin.

DICKSON TAKES EXTENSIVE TRIP

Dr. J. G. Dickson, professor of plant pathology and one of our members, sailed early in March for Europe where he expects to make an intensive study of the grain situation. Especial attention will be given to the scab disease of small grains. In Russia, which is the center of Europe's oldest cereal growing region, Doctor Dickson believes that many years of exposure to various diseases may have weeded out many of the susceptible strains. He has taken over a number of the resistant strains

that have been developed in the United States and hopes, by comparison, to find Russian grains with more resistance to diseases than ours, especially since natural selection during Russia's numerous scab epidemics would give more opportunity for more resistant strains to appear. Doctor Dickson will visit the grain breeding experiment stations in Germany, Italy, and Russia. Most of the parent strains from which modern American cereal grains have been developed came originally from Europe, and only a few attempts have been made to study the relative degrees of resistance shown by varieties on opposite shores of the Atlantic.

Doctor Dickson, upon arriving in Europe, will spend some time in various English laboratories, and will also make a study of grain elevator and storage conditions. From there he will go to Germany and study the elevator conditions. He will arrive in Russia the middle of April where he will study in some of the laboratories at Leningrad and Moscow. Then he expects to go to Southern Russia when he will begin a study of the cereals and continue northward as the grains develop. He will meet Dr. L. R. Jones at Constantinople and together they will inspect the grains in Armenia, Turkestan, Trans-Caucasia, the Volga steppes, and the Ukraine.

In August Doctor Dickson will be in England to present a paper at the Plant Science Congress at Cambridge. After this meeting he will spend three months studying the handling of grain at the principal European ports before his return to the States in November.

PROMINENT SPEAKERS DURING THE YEAR

During the past year some very well known speakers were obtained for the open meetings of the Society. Dr. Clarence Cook Little, former President of the University of Michigan, talked on "The Genetics of Cancer". Dr. Chauncey Juday, of the Geological and Natural History Survey, gave an illustrated lecture on "Lake Investigations at the Trout Lake Laboratory". The principal speaker at the first semester Initiation Banquet was Dr. M. F. Guyer, Chairman of the Department of Zoology at the University, our newly elected honorary member. Other speakers during the year included E. W. Hopkins from Agricultural Bacteriology, who lectured on "The Proximate Nature of the Fat of Root Nodule Organisms". "The Production of Acetic and Lactic Acids from Mill Sawdust" was the subject of R. J. Allgeier, one of our members from Agricultural Chemistry. Dr. A. R. Midgley, Soils, discussed "Phosphates in Relation to Pasture Fertilization". Dr. A. A. Granovsky, Pro-

fessor in the Department of Economic Entomology, presented "Insects in Relation to Plant Diseases".

At the spring election the following new officers were elected: President, E. M. Searles, Economic Entomology; Vice President, R. I. Evans, Botany; Corresponding Secretary, L. W. Wilson, Agricultural Chemistry; Recording Secretary, W. P. Allyn, Agricultural Bacteriology; Treasurer, H. C. Sagen, Agricultural Bacteriology; Editor, E. M. Hildebrand, Plant Pathology.

A promising new group of initiates have been taken in during the year. A large number of our active members will be leaving us at the end of the present school year. The following Phi Sigma men have left us since last year:

AGRICULTURAL CHEMISTRY

- Dr. C. A. Elvehjem—Abroad. Will return next year.
- W. P. Emslie—Mormon Mineral Company, Quincy, Ill.
- F. L. Gunderson—Quaker Oats Company, Chicago, Ill.
- Dr. C. W. Lindow—La Crosse Teachers College, La Crosse, Wis.
- Dr. H. C. Otterson—Chemist. Pleasant Valley Farms, Waukesha County, Wis.
- Dr. B. H. Thomas—Walker-Gordon Laboratory, New Jersey.

GENETICS

- Dr. C. R. Burnham—Bussey Institute, Massachusetts.
- L. E. Hawkins—Genetics. Oklahoma Agricultural College, Stillwater, Oklahoma.
- M. H. Knudson—President of Snow College in Utah.
- A. J. G. Maw—Macdonald College, Quebec, Canada.
- Dr. P. H. Senn—Agronomy. University of Florida.
- Dr. B. L. Wade—Genetics. Idaho Agricultural College.

AGRICULTURAL BACTERIOLOGY

- D. H. Dunham—Purdue University, Lafayette, Ind.
- P. A. Tetrault—Purdue University, Lafayette, Ind.
- R. C. Thomas—United States Public Health Service, Washington, D. C.
- Dr. F. Zucker—Budapest, Hungary.

ANIMAL HUSBANDRY

- E. H. Hughes—College of Agriculture, Davis, California.
- I. W. Rupel—(Exchange) Honolulu, Hawaii until September, 1930.

AGRONOMY

- Dr. A. R. Midgley—Research on Soils. University of Vermont, Burlington, Vt.

BOTANY

T. D. Mallery—Desert Laboratory, Tucson, Arizona.

Dr. M. B. Linford—Research on Pineapple Diseases, Honolulu, Hawaii.

ZOOLOGY

Dr. H. W. Beams—Zoology. University of Virginia.

L. G. Grumbreck—Poor Health. At home.

P. S. Henshaw—New York Cancer Institute.

N. N. Shapiro—University of Nebraska, Lincoln, Nebraska.

C. F. Wu—University of China.

A. Wiebe—U. S. Bureau of Fisheries, Davenport, Iowa.

PHARMACY

Dr. A. A. Harwood—University of Valparaiso, Valparaiso, Indiana.

Dr. R. I. Robinson—Dept. of Chemistry, University of Washington.

S. S. Chao—Research at Burrows Wellcome and Co., Tuckahoe, N. Y.

R. D. Bienfang, Connecticut College of Pharmacy, New Haven, Conn.

DAIRY HUSBANDRY

B. C. Horrall—Research in Dairy (Full time) Assoc. Prof., Purdue University.

G. Mutton—Research in Dairy, Iowa State College, Ames, Iowa.

*ECONOMIC ENTOMOLOGY

Dr. A. Weed—Care of John Powell & Co., Inc., 114 E. 32nd St., New York, N.Y.

PLANT PATHOLOGY

L. J. Alexander—Research on Vegetable Diseases, Ohio State University.

Dr. H. R. Angell—Research on Tobacco Diseases, Australia.

Dr. J. M. Hamilton—Research on Fruit Diseases, Geneva, New York.

Dr. N. Mogendorff—Teaching Biology. University of Toledo, Toledo, Ohio.

Dr. F. L. Wellman—Research on Banana Diseases, Honduras, Central America.

Dr. E. E. Wilson—Research on Fruit Diseases, Davis, California.

HORTICULTURE

Dr. A. H. Finch—at home. Hubbard, Oregon.

A. C. Gossard—New York Central Ry. Co., New York.

SOILS

Dr. M. C. Ford—Kentucky State Teachers College, Bowling Green, Ky.

Dr. A. F. Heck—Honolulu, Hawaii. Research in Soils and Pineapple culture.

J. G. Mitchell—University of Saskatchewan.

C. V. Ruzek—Oregon State Agricultural College, Corvallis, Oregon.

STATE LABORATORY HYGIENE

J. C. Mackin—Superintendent of Sanitary District, Aurora, Ill.

EARL HILDEBRAND.

ETA University of Akron

On account of reorganization in Eta Chapter we failed to get in a report for the last issue of the BIOLOGIST.

The following members are actively engaged in biological research problems:

Dorothy Schneider—"Effect of Cathode Rays on Seedlings".

Merlin Hayes—"Effects of Various Insecticides on Beetles".

Morris Berloff—"Disease Control Through Public Schools".

Harry Lieberman—"Survey of World Cancer Statistics".

Frank Whiteman—"Study of the Effect of Acids on the Coloring of Colas". "Study of Algae in the Cuyahoga Gorge."

Ruth Trommer—"Study of Flora in the Cuyahoga Gorge".

Ruth Haines—"Compilation of Course of Study for Second Year Biology Students in High Schools".

Mervin Robertson—"Survey of Venereal Disease Control in the City of Akron".

Mary Sue McKenzie—"Bacteriology of Tuleremia".

Eta Chapter will add six new members to the local organization by initiating the following biology students on April 10: Mrs. Virginia Fox, Beatrice Kepler, Ellis Lowen, Ralph Hartz, Robert Fulton.

Mrs. S. L. Miller was made an honorary member of the group.

Among the initiates the following have just completed their research papers: Ralph Hartz, "Cultivation of Brucella"; Ellis Lowen, "Graphic Study of Water-Borne Diseases"; Robert Fulton, "Survey of Typhoid Fever Epidemics in Ohio Towns".

Dr. R. B. Church gave an interesting talk before the Phi Sigma group on March 15. His subject was "Prophylaxis of Vincent's Angina".

Dr. T. H. Boughtan, Pathologist at the City Hospital, gave an interesting lecture to the members of our chapter, on the subject of "Paleopathology". The talk was particularly interesting to the students of Evolution.

Several closed meetings have been held, during the last few months, in which interesting talks were given by the members of our group. Each member gave a brief resumé of his research problem.

The friends and members of Eta Chapter look forward to meeting Doctor Ortenburger in Akron on April 24.

We feel signally honored to have had him speak before our group.

HARRY LIEBERMAN.

THETA

Michigan State College

Theta Chapter started the fall term by holding an open meeting at which Doctor Crist of the Horticultural Department gave a very interesting lecture on "Eddington's Idea of Science".

In order that the members might become better acquainted with the research work that is being carried on in the various departments, it was decided that one or two active members of the Chapter give short papers or discussions at each regular meeting on research problems they are carrying on or have completed. Three such papers already given are: "Chemistry and Physiological Properties of Caffeine", by W. F. Allen; "Grit Cells in Pears", by L. P. Batjer; "The Application of Chlorates to Different Parts of the Plant", by W. H. Daugherty.

During the winter term an initiation banquet was held, at which the following eighteen men were initiated into membership into Phi Sigma Society: A. J. Bauer, C. Dorman, A. L. Grizzard, (Soils Dept.), W. H. Daugherty, C. R. Adair, R. W. Lipscomb, D. Z. Terhume, M. S. Kipps, (Farm Crops Dept.), J. R. Kienholz, H. J. Newell, A. S. McDonough, (Botany Dept.), E. A. Beavens, J. W. Scales, A. F. Gallo, (Bacteriology Dept.), G. R. Starcher, D. A. Byrd, (Horticultural Dept.), G. A. Bowling (Dairy Dept.), F. J. Fehlberg (Forestry Dept.).

Following the initiation Doctor Hoppert of the Chemistry Department gave a very instructive talk on "Vitamins and Their Relation to Health".

A very good attendance and an increasingly keen interest has been maintained at all of the meetings of Theta Chapter held thus far during the current college year.

The following is a report of the activities and research being carried on during the present college year by various faculty and active members of Theta Chapter of Phi Sigma:

BACTERIOLOGY AND ANIMAL PATHOLOGY DEPARTMENTS

Dr. H. J. Stafseth is carrying on extensive investigations in poultry diseases. Some of his recent research problems and publications are—Vaccination for Fowl Pox, Rickets as a Secondary Manifestation in Coccidiosis, Salmonella Aertrycke Infection in the Canary Bird, Pullorum Disease, and Pathology of Coccidiosis.

Dr. F. W. Fabian is doing research work to show the influence of anions on bacterial viability.

Dr. W. L. Chandler is continuing his studies on colloidal iodine as a disinfectant and parasitic remedy.

Dr. E. T. Hallman's investigations have consisted mainly of those on contagious abortion in cattle, the vaccination against this disease and its relation to undulant fever in man.

Dr. L. B. Sholl has finished several lines of research, the results of which will be published soon. They are—Pathology and Bacteriology of Udder Infections, Diseases of the Udder, and Relation of Milk Production to Udder Infection and Pathological and Bacteriological Studies of *Brucella Abortus* Infections of Pigs.

W. L. Mallman has been carrying on a varied line of investigations as the following list indicates: The ability of *Escherichia Coli* to withstand chlorination in the swimming pool, Study of Variation in Typhi Paratyphi Group of Micro-organisms, Occurrence of colon bacilli in pressure tank water systems, Isolation of *Salmonella pullorum* from intestinal contents of infected baby chicks. Influence of phosphates on the metabolism of bacteria, Prophylactic and therapeutic use of Bacteriophage in B. W. D.

M. W. Emmel has succeeded in publishing nineteen articles during the present college year, some of which are given in cooperation with Dr. I. F. Huddleson and Dr. H. J. Stafseth. Practically all of Mr. Emmel's work has to do with poultry diseases, such as *Brucella* disease in the fowl, and related articles, Poults Susceptible to bacillary white diarrhea and Arthritis in the pigeon caused by *S. schotmulleri*.

J. P. Torrey is working on the pathogenicity of vaccines for *B. abortus* infections, pathology and bacteria of the udders of bovines and the study of *B. abortus* cultures from milk.

E. A. Beavens is doing research work on the effect of lactose on *E. coli* when heated to 125° F. for 30 min. also on the aerobic group as an index to proper pasteurization.

H. W. Johnson is also doing extensive research work on the *Brucella abortus* organism. Recent investigation with Dr. I. F. Huddleson is "The significance of *Brucella agglutinens* in the blood of Veterinarians", which is to be published soon.

A. F. Gallo has recently completed the study to show the influence of phosphates on metabolism of bacteria.

BOTANY DEPARTMENT

Dr. E. A. Bessey who has been head of the Botany department at Michigan State College for many years has recently been made Dean of the Graduate School.

Dr. E. F. Woodcock has three recent papers in the Michigan Academy of Science, Arts and Letters, Vol. XI, 1929. They are—Anatomy of the leaf of the black raspberry, Seed development in *Thelygonium Cynocrambe* L. and A natural Chimera of the sunflower.

Dr. J. E. Kotila's recent investigations include a study of the biology of a new spore-forming *Rhizoctonia corticium araticula*, and some Chimeras of *Solanum tuberosum*.

J. R. Kienholz has been doing work on cultures and strains of the stinking smut of wheat and is to be published soon in *Phytopathology*.

L. C. Cochran in cooperation with the Horticultural Department has finished work on dusting tests for the control of tomato diseases.

CHEMISTRY DEPARTMENT

Dr. R. C. Huston, Professor of organic chemistry at Michigan State College for several years, has recently been made acting Dean of the Applied Science Division. Doctor Huston is directing investigation on the chemistry of the *Brucella Bacillus* in cooperation with the Bacteriology Department.

C. D. Ball Jr., is continuing his research problem on colloidal-bound water and its relationship to the chemical composition of plants.

W. F. Allen recently completed studies on the determination of caffeine in decaffeinated coffees, the results of which will be published in the May issue of the *Journal of the Ass'n of Official Agr. Chemists*.

DAIRY DEPARTMENT

C. F. Huffman with O. E. Reed have finished the work on the results of a five year mineral feeding investigation with dairy cattle, which will be published soon as a bulletin.

L. W. Lamb's present research problem is "The need of a phosphorus supplement with alfalfa hay in the ration of dairy heifers".

G. A. Bowling is making a study of the comparison of the efficiency of the proteins of a simple home grown ration with the proteins of a complex ration.

FARM CROPS DEPARTMENT

The research problems of the following active members are as follows:

D. L. Clanahan—Seed corn drying.

W. H. Daugherty—The relative effectiveness of different methods of applying chlorates.

R. W. Lipscomb—The residual influence of some chlorates upon crop production.

J. A. Thompson—Some of the factors affecting the yield of pea beans in Michigan.

D. Z. Terhume—A survey of the history, development and present international status of seed potato certification.

ENTOMOLOGY DEPARTMENT

G. Farleman is working on the standards and comparisons of larvae infesting fruit as a research problem at the present time.

W. F. Morofsky is making studies of the elm-leaf beetle.

FORESTRY DEPARTMENT

L. M. Wood has just completed his research problem on the silviculture management of the oak-hickory forest type in southern Michigan.

GEOLOGY DEPARTMENT

S. G. Berquist is completing his work on the Surface Geology of Luce and Alger counties and will be published in future issues of the American Academy of Science.

Dr. W. A. Kelly has finished investigations on Pennsylvanian Faunas in Michigan and will be published in the June issue of the *Journal of Paleontology*.

HORTICULTURAL DEPARTMENT

The research problems of the following active members is as follows:

L. P. Batjer—A study of the stone cell variation in different varieties of pears.

D. A. Byrd—To determine the relationship between leaf area and quantity and average size of blueberries.

W. W. Smith—A study of the changes of the pectin constituents in pears.

G. R. Starcher—Spray hydraulics.

SOILS DEPARTMENT

C. H. Spurway has had published a bulletin recently on "A Test for Water-Soluble Phosphorus".

R. L. Cook completed his research problem some time ago on a study of the nitrogen content of the expressed sap and the tissues of wheat, rye, barley and oats. The results of this investigation will be published in a coming issue of the American Society of Agronomy.

ZOOLOGY DEPARTMENT

Dr. H. R. Hunt is the author of a publication on "The Biological Aspects of War", which is to appear soon in Monograph No. 2 of the Eugenics Research Association and also in book form. This book is the result of several years of painstaking study and investigation by Doctor Hunt and should prove a worthwhile and exhaustive treatise on the subject.

W. F. ALLEN.

LAMBDA

University of Montana

About the first of the year Lambda Chapter received a very interesting letter from Miss Helen Griffin. Miss Griffin is employed as head of the Zoology Department of Hivanan College, Foochow, China. The letter gives a very interesting account of her trip to China last summer and of her impressions of the people and country. Some portions of her letter are as follows:

"When that invitation to the initiation came—the day after Christmas—it made me quite homesick. I sat down and reviewed the initiation of last year and the different good times that we had had together and wished that I might again be with you on this occasion. However, that was not possible, so the best that I can do is to send you my best wishes. It is late, I know, but tell the new members of Phi Sigma that I hope that they will enjoy it as much as I did and I hope that it will mean quite as much to them in both professional enjoyment and pleasure and in just good times and fellowship. I shall never forget the Phi Sigma group—even though I am half way across the globe and planning to be here quite a while. . . .

"This is a wonderful field for botany and zoology as it is almost unworked in all respects. Not only is there a wealth of work to do, but it is the key of

all China and almost of the entire East. Fukien province is divided into three parts by geographical barriers. In the southern part, we find the fauna and flora of Burma and Himalaya Mts., while in the northern part we get the fauna and flora of northern China and even Siberian forms. . . .

"The Chinese are very good students. As I have taught this year, I have often thought of American students. The attitude here is far different. Students who do not get at least 95 feel disgraced. They never come to class with a lesson unprepared. In this whole semester, I have never seen a student who wasn't ready to recite on what was assigned. They study too hard and often we have to warn them to get out and do other things. Add to that the difficulty of study in a foreign language, for everything is done in English, and you can know how hard they work. It is a pleasure to teach them for they are eager to learn."

We are glad to hear that Miss Griffin is getting on so well and is enjoying her stay in China. Miss Griffin was initiated into Lambda Chapter at the University of Montana in 1925 and has been an interested and helpful member ever since. Upon graduation she taught school until the fall of 1929 when she returned to the University of Montana and took her M.A. degree in biology. Last summer she was employed by the same institution to carry on the summer school classes in zoology. Afterwards she embarked upon her trip to China of which her letter gives a very interesting account.

Two of our graduating members this year plan to uphold the honor of Phi Sigma by continuing their education. Mr. Faye Couey, President of Lambda Chapter, has been offered an assistantship in the Department of Zoology at the University of Wisconsin and plans on taking up his work there this fall. Mr. Herbert Eastlick is also employed as assistant in zoology at Washington University, St. Louis, Missouri. Several other members of our Chapter plan on furthering their education but as yet have made no definite plans.

PAUL LEMMON.

XI

University of Nebraska

With the approach of the June commencement, most of the members of Xi Chapter are putting in their last efforts to complete the work which has been carried throughout the year. Those members who will still be active next year look with sorrow, and yet with pride upon those others who will not be active next semester, but will have moved away looking for new fields of endeavor, having completed their work at the University of Nebraska.

Among those who expect to publish, in the near future, the results of their work in the past year or two are the following:

Wilbur E. Deacon. "Some Studies on the Bacteria of the Oral Cavity, with Special Reference to those of the Teeth and Pulp Cavities." Mr. Deacon, however, will be active again next year.

Mary Langevin will be at the College of Pharmacy next year. Her research is on "Emulsions of Official U. S. P. Oils".

H. J. Cottle will publish his "Studies on the Vegetation of Southwestern Texas". He will not be here next year.

Myrel Burke will have her "Contributions to the Flora of Black Hawk County, Iowa", ready for publication within the next year.

Frieda Roerden will remain with Xi Chapter, and continue her work on "The Plasticity of Hydrophytic Roots to Water Content and Aeration". This work will be completed by June, 1931.

Brigitta Koerting will remain with the Zoology department, and begin her work on a Master's Degree.

Edson Fichter, Jr., will also continue his work here on the taxonomy of the engraver beetles, Ipidae.

R. M. Nelson will receive his Master's degree this summer, and hopes to enter economic entomology.

Geo. A. Herzog will publish descriptions of "Two new Species of Nematodes from the Skunk". These are two very interesting forms which he has recently studied. One is a *Metastrongyle* nematode from the lung, and the other is a *Trichstrongyle* nematode from the intestine. They are especially interesting, since neither of the genera to which they belong has ever been reported from North America.

John R. Darrah is preparing a description of "A New Anoplocephalid Cestode from the Woodchuck".

Xi Chapter lost three active members this year. Theodora Klose is now assisting Prof. Wyland at Iowa State. James Jensen, from the Plant Pathology Department, is now in Cuba doing research on the diseases of sugar cane. Ben Dittus is also doing research on sugar cane, but in Haiti.

At its last regular meeting, Xi Chapter elected thirteen new members. These new members will be announced at the annual Honors Day Convocation of the University on May first.

MARION WILLIAMS.

RHO

University of Illinois

At the last meeting of Rho Chapter eighteen new members were initiated and a banquet was given in their honor. "The Yellowstone National Park" was the subject of a most interesting talk illustrated

with colored slides, which was given by Dr. C. F. Hotles of the Department of Botany. The following were initiated into active membership: In agriculture—S. L. Tuckey and H. L. Buckardt; in botany—A. L. Shuck, T. M. Sperry, Mildred Rogle, Rhoda Crouch, G. A. Greathouse, and S. J. Ewer; in entomology—J. H. Evans; in physiology, Leora Kneer; in zoology—J. D. Combes, C. J. Firkins, E. L. Miller, Margery Washburn, and Florence Fields; in home economics—Rachel Davis, Catherine MacLaren, and Louise Pickens. Olga Zivermann and Helen Code, who were unable to be present will be initiated later.

We have been fortunate this year in hearing some very interesting speakers at our meetings. Mr. T. S. Hamilton, of the Department of Animal Nutrition, spoke on "Nutritional Anemia". Dr. Frank Thorpe, Jr., in the Animal Pathology Department, gave a talk on "Rabies", which was illustrated with moving pictures. We learned "Some Interesting Things About Bees" from Dr. V. G. Milum, of the Entomology Department. Dr. C. M. Woodworth of the Department of Plant Breeding, spoke to us on "Abortive Soybean Seeds".

MARGARET L. PLANT.

SIGMA

University of Florida

Sigma encountered some difficulty in getting started this year due to the absence of both the President, Harold Mowrey, and the Vice-President, Erdman West. Both of the men were called upon to aid in the eradication of the Mediterranean Fruit Fly.

However, since the election of K. W. Loucks to the Presidency and of A. N. Tissot as Vice-President pro-tem, Sigma has been able to go ahead with what, if attendance records may be used as proof, may be called a very successful year.

There has been at each of the meetings an informal talk by one of the members. The topics of these talks may prove of interest to the Society. They are: "Geographic Distribution of Dragonflies"; "Just Bats"; "Science and Spirits"; "Distribution and Habits of Cave Crickets"; "Fossil Man"; "Reptiles of Florida"; and "Citrus Canker". It is advisable to call these talks informal as they are actually more in the nature of discussion as it is a custom of Sigma for any member to ask questions not only after the presentation but during the talk itself, it having been found that many points of interest are thus brought out.

On February 19, Sigma met jointly with Sigma Xi. The societies were honored at that time by an address by Doctor G. K. Noble of the

American Museum. Doctor Noble spoke of the inter-relations of the work of the naturalist and the biologist, especially the "laboratory" biologist.

December 4, Sigma met at a lake near the University for the semi-annual "feed" and initiation of new members. Dr. L. W. Gaddum was at that time taken in as a faculty member and Clarence DeMasters, S. L. Brothers, T. L. Cain, S. C. Pearson, and S. W. Welles as active members.

The active members to be initiated this spring are: T. J. Jones, M. B. Jordan, Raymond Lyle, W. M. Fiefield, E. D. Matthews, H. A. Bess, L. M. Sompayrac, and M. T. Donner.

A partial list of the members, both active and faculty and their respective fields of work are:

K. W. Loucks, M. S. Florida. Citrus canker investigations.

A. N. Tissot, M. S. Ohio State. Systematic study of the Florida Aphididae. Biology and control of certain economic aphids. Control experiments with leafhoppers and other economic insects.

Clarence DeMasters. Determination of whether lecethin can be synthesized in the animal body when fed on a diet free from these substances.

H. E. Bratley, M. S. A. Florida. Life history studies of various insects.

W. B. Tisdale, Ph.D., Wisconsin. Development of strains of tobacco resistant to black-shank, Publications: Fla. Expt. Sta. Bul. 198, "Tobacco Culture in Florida"; "A Disease of Tobacco Seedlings Caused by *Septomyxa affinis* (Sherb.) Wr.", Abstracted in *Phytopathology* 19 (1): 90. 1929.

C. F. Ahmann, Ph.D., Missouri. Nutritional study of school children in five representative counties in Florida. Results of study to be published as an Extension Bulletin from the Florida Experiment Station. He is now working on "effect of removal of thymus gland on calcium, phosphorus and fats", with the use of rabbits as experimental animals.

L. W. Gaddum, Ph.D., Missouri. Chemical study of citrus pectins.

P. W. Calhoun. Study of the biology and control of the cotton boll weevil, *Anthonomus grandis* Boh.

Erdman West, B.S., Penn. State. Mycology and Florida botany, with special reference to timber decay.

L. W. Zeigler. Aphididae.

R. D. Dickey. Plant Pathology. Bacterial Diseases of Florida palms.

J. T. Creighton. Entomology. Problems in economic entomology.

R. K. Voorhees. Entomology. Life history and habits of the imported cabbage butterfly under Florida conditions.

C. E. Abbott. Horticulture. Citrus fruit bud differentiation.

H. A. Bess. Entomology. Life history and biology of the diamond back moth.

M. R. Bedsole. Agronomy. Soil bacteria in Florida.

T. L. Cain. Entomology. Life history and habits of the cross-striped cabbage worm.

S. L. Brothers. Entomology. Problems in economic entomology.

This is far from a complete list but is all that is available at present.

J. B. TOWER, JR.

CHI

Montana State College

During the last quarter Chi Chapter has had some very interesting meetings. Mr. O. A. Stephl presented an interesting report on "Rodents and Rodent Control in Montana" at one of the meetings.

Dr. J. R. Parker, faculty member and professor of entomology, recently resigned his position as professor in the department to accept the position as Senior Entomologist of Montana. His headquarters will be in Bozeman, Montana.

Professor D. B. Swingle will take Sabbatical leave during the year of 1930-1931 and will continue work for his Ph.D. degree at the University of Wisconsin. During his absence Dr. F. B. Cotner will be the head of the Department of Botany and Bacteriology.

Initiation was held for the five new members. An initiation banquet was also planned at which time the initiates presented very clever papers on topics which were assigned to them. At this time we were very fortunate to have Mr. Shotwell with us from Epsilon Chapter at Denver. Mr. Shotwell is associated with the Department of Entomology here. The members initiated were: Mildred Porter, Gail Avery, Charles Johnson, Ashworth Thompson, of the Botany and Bacteriology Department, and Richard Bruner of the Applied Science Department.

At the Phi Kappa Phi (Scholastic) election to membership this year there were several Phi Sigma members. Of the faculty members who were initiated was Dr. F. B. Cotner. Of the student members there were Lois Cobleigh, Joseph Delaney, Fred Morton, Virginia Mills, and James Copeland.

VIRGINIA MILLS.

HISTORY OF THE DEPARTMENT OF BOTANY AND BACTERIOLOGY OF MONTANA STATE COLLEGE

Montana State College, one of the present units of the University of Montana, came into being in February, 1893, when the third legislative assembly established a State University at Missoula, a State College of Agriculture and Mechanic Arts at Bozeman, a State School of Mines at Butte, and a State Normal College at Dillon. In 1925 a fifth unit the Eastern State Normal School at Billings was added, and in 1928 a sixth unit the North Montana School was established at Havre.

These units were managed independently by local executive boards until 1909, when they were placed under the direction of the State Board

of Education. The final step in consolidation was effected in 1913 when the Thirteenth Legislative Assembly placed the executive control of all four units in the hands of a Chancellor, and created the University of Montana.

The Botany Department was founded on April 17, 1893, when Luther Foster, who was chosen acting president on March 21, opened the doors of a new institution for service. His title was Agriculturist and Botanist. At that time the staff consisted of two men, the Acting President, Agriculturist and Botanist, and one assistant. In the fall at the beginning of the college year A. M. Ryon was elected president and the staff increased to six members.

With this humble beginning the Department is now organized into three divisions—teaching, extension and research.

Meeting the department obligation to the taxpayers of the State of Montana the College Faculty teaches college students:

1. Botany in its relation to crop production, plant disease control and other economic aspects.
2. Bacteriology in its relation to soil fertility, dairy products, preservation of foods, and sanitation.
3. Both these subjects for professional life work.

From 1906, (records are not available prior to that time) there was a steady growth in numbers of students and in new courses in both botany and bacteriology. This continued until the world war interfered in 1918. Since the war this increase has continued. The following table is based on student quarter credits and is by five year periods, except at the beginning and at the end.

STUDENT QUARTER CREDITS, 1906 TO 1929

	'06-'07	'10-'11	'15-'16	'20-'21	'25-'26	'28-'29
Botany	328	357	592	426	850	1016
Bacteriology	60	172	368	212	555	946
Total	388	529	960	638	1405	1962

The Teaching unit requires the full time of two men, with considerable aid of student assistants.

The duties of the department in the Extension Division consist in:

1. Examination of diseased plants and advice on the control of plant diseases.
2. The naming of weeds and recommendations for their control.
3. Identification of grasses and other plants of interest.
4. Advice concerning seed inoculation.
5. Information upon stock poisoning plants.

This service requires the time equivalent of $\frac{1}{4}$ man.

The research or Experiment Station unit of the department cooperates with the United States Department of Agriculture in:

1. Plant Disease Survey.
2. Grain Smut Investigations.
3. Barberry Eradication Campaign.
4. Epidemiology studies of black stem rust of wheat.
5. Oat Blast Studies.
6. Miscellaneous studies.

This cooperative service requires the time equivalent of $\frac{1}{4}$ man.

The active research projects under investigation are:

1. Miscellaneous Plant Diseases (State fund).
2. Degeneration Diseases of Potatoes (Adams fund).
3. Injurious effects of Oil Sprays (Purnell fund).
4. Blight and root rots of the Pea (Adams fund).
5. Date of seeding and methods of Treating Wheat to Control Smut (Purnell fund).
6. Influence of Plant Food on Apple Trees (Purnell fund).
7. Insects on abandoned land (Purnell fund).
8. Breeding Great Northern Beans for Varieties Resistant to Blight, Rust and Mosaic disease (Purnell fund).

The research work requires the time equivalent of two men.

PUBLICATIONS

The department has issued 22 station bulletins, 15 station circulars, 3 extension publications, 16 journal articles, one plant disease reporter supplement, and Prof. D. B. Swingle, head of the teaching unit, is author of "A Textbook of Systematic Botany".

The text material of these publications has consisted largely of plant pathology, stock-poisoning plants, forage and economic plants, egg preservation, weeds, fungicides, legume inoculation, taxonomy, parasitism, and physiological reactions of plants to arsenic compounds.

BUILDINGS AND EQUIPMENT

From the beginning until 1925 all biological work was carried on in a brick veneered building erected in 1894 now occupied for the Administration Offices of the Extension Division. This building was originally constructed as a residence for the Director of the Experiment Station and it is the oldest building now standing on the campus. At first only a small part of the building was available for biological work as all of agriculture was housed in it. In the fall of 1909 agriculture moved to a

new building and from then to June, 1925 the "Old Biology Building" gave about half its space, including basement and attic, to the work of botany and bacteriology. Since 1925 this department has occupied all the first floor of Lewis Hall, with some additional rooms in the basement and on the second floor.

The student and research laboratories are well equipped so that the work can be carried forward in a most efficient manner.

HERBARIUM

The Herbarium was begun by Luther Foster and E. V. Wilcox, who made some collections but did not arrange or classify them in any way.

A large part of the formal herbarium work was done by W. J. Blankinship. In a report published December 1, 1905, he stated "The Herbarium now contains about 15,000 sheets of Montana species, some 5000 from other parts of the United States and 800 species from India. Among these are Kelsey World's Fair collection of 1,150 specimens, set of the Tweedy collection of Montana species, the entire Williams' Herbarium of 1,200 specimens, exclusive of duplicates, the Rydberg-Bessey collection of about 600 specimens, the Koch Herbarium of 1,200 specimens, the Elrod collection of 1897, containing about 225 specimens and many smaller collections from various parts of the state. Of Cryptogams our herbarium now contains Cummings, Williams and Seymour's Lichenes Boreali Americani (250 specimens), Renauld & Cardot's Musci Europaei (250 specimens), Collins, Holden & Setchells Phycotheca Boreali Americani (850), Seymour and Earl's Economic Fungi (500), Ellis and Everharts Fungi Columbiani (1400), a private collection of about 400 Characeae and several hundred other specimens from Montana".

Since that time yearly additions of both flowering plants and fungi have been added and at present the Herbarium contains about 25,000 sheets of flowering plants and 15,000 sheets of fungi. There is also available considerable material for exchange.

The Library for reference and use in systematic work contains over 1000 volumes, in addition to the leading botanical and bacteriological periodicals which are on file. The works of reference and the large herbarium offers unusual facilities for study and research into the distribution, adaptation and economic possibility of the most interesting Rocky Mountain flora.

PERSONNEL

The continuity and success of the work of the Department since 1906, has been due largely to the fact that comparatively few changes in the

personnel has taken place as indicated by the following table:

		College Faculty	Station Staff
1893-1896	Luther Foster	{ Agriculture	Agriculture
		{ Botany	
1895-1898	E. V. Wilcox	Biology	Agriculture
1897-1898	H. S. Jennings	{ Botany	Botany
		{ Bacteriology	
1898-1905	J. W. Blankinship	Botany	Botany
1898-1900	H. C. Thompson	Botany (Ass't)	
1902-1903	Edna A. Maynard	Botany (Ass't)	
1903-1904	Beatrice A. Freeman	Botany (Ass't)	
1904-1906	W. W. Jones	Botany (Ass't)	
1905-1930 ¹	R. A. Cooley	Biology	Head Biology Dept.
1906-1930 ²	D. B. Swingle	{ Botany	Botany
		{ Bacteriology	
1909-1930 ³	H. E. Morris		Botany
1911-1923 ⁴	H. M. Jennison	Bot. & Bact.	
1915-1916*	H. B. Foote	Bot. & Bact.	
1916-1917*	R. A. Studhalter		Botany
1919-1920	Grace B. Nutting		Botany
1921-1922	Gussie Pool		Botany
1922-1923*	W. N. Christopher	Bot. & Bact.	
1923-1930 ⁵	F. B. Cotner	Bot. & Bact.	
1925-1930	P. A. Young		Botany
1928-1929*	Edith Swingle	Bot. & Bact.	

¹. R. A. Cooley Entomologist. In charge of all biological work from 1905 to 1914, inclusive.

². D. B. Swingle. In charge of all work in botany and bacteriology from August 1906 to date. From 1906 to 1914 under supervision of R. A. Cooley. Since then as head of department.

³. H. E. Morris. Second in rank in the Experiment Station work 1909-1925. Since 1925 Department Head in the Experiment Station and Extension Divisions.

⁴. H. M. Jennison. Extension Botanist 1918-1922, inclusive.

⁵. F. B. Cotner. Extension Botanist 1923-1924.

*On temporary appointment during the time when regular staff members were on leave of absence for advance work.

CHI CHAPTER OF PHI SIGMA OF MONTANA STATE COLLEGE

On the fourteenth of May, 1925, a local fraternity was formed and named Phi Sigma Beta. At the same time it was decided to petition Phi Sigma as soon as the organization had reached sufficient size and on April 7, 1926, the petition was prepared and sent to the National Secretary. On February 11, 1927, Chi Chapter was installed at Montana State College.

H. E. MORRIS.

OMEGA
University of Oklahoma

Since the first of the year, the members of this chapter have been engaged in a number of varied activities.

On January the second, a banquet was held in honor of the National Council which convened here for the consideration of constitutional matters.

On March seventh and eighth, Phi Sigma, in connection with the Biology Club, sponsored the annual Biology Roundup. This is a general get-together of students and faculty of the Biology Departments of the colleges in Oklahoma and adjoining states. Sixty-eight delegates from these colleges were registered. Friday evening a banquet was held, after which, Dr. David Whitney, Professor of Zoology at the University of Nebraska, delivered a lecture on "Our Heredity". Saturday morning was given over to round table discussions for faculty members, and to research reports by students representing the various schools. Immediately preceding the luncheon Saturday noon, Doctor Whitney gave a talk on "Sex Determination". During the afternoon there were more student reports, and as a conclusion to a very successful meeting, Mr. George I. Phillips, Oklahoma State Forester, gave an illustrated talk on fire prevention and its problems.

On March thirteenth, a delegation from this chapter went to Stillwater, Oklahoma, to be present at the installation of Alpha Eta Chapter which had been organized at the A. and M. College, located at that place.

Dr. A. Richards, Head of the Department of Zoology at Oklahoma University, was the Installing Officer.

Mrs. Lois Gould Bird acted as official representative of Omega Chapter.

The March meeting was held March twenty-eighth, at the home of Dr. Paul B. Sears for the election of officers and the consideration of new members.

Students elected to membership in Phi Sigma at this time were: Mr. Marcus Ravitch and Mr. Walter McKenzie of the Zoology Department, Miss Eva Hooper, Miss Elizabeth Ducker and Mr. Fred Tinney of the Botany Department.

The new officers elected were: President, Mr. Clarence E. Taft; Vice-President, Miss Kara Fullerton; Secretary, Mr. Charles Olmstead; Treasurer, Mr. Glenn Couch.

Following the election, a talk on the "Desmids of Oklahoma" was given by Mr. Clarence Taft.

CLARENCE E. TAFT.

ALPHA ALPHA

University of Southern California

The Alpha Alpha Chapter of Phi Sigma Society of the University of Southern California have entertained as their guests and as speakers several distinguished scientists during the past year. Dr. W. B. McDougall, visiting Professor of Botany at the University of Southern California, gave an illustrated lecture on "Scouting for Mycorrhizae" at the February meeting. On March 14, Sigma Xi and Phi Sigma Societies jointly honored Dr. and Mrs. J. Arthur Thomson at dinner. Doctor Thomson, visiting Lecturer at the University of California at Los Angeles and Regius Professor of Natural History at Marischal College, Aberdeen, Scotland, portrayed in his most interesting and dramatic way the "Drama of Animal Life". Dr. E. L. Walker of the Hooper Institute of Medical Research, University of California, addressed the April meeting on "Some Biological Problems of Leprosy". The annual spring banquet honoring new members was held in May. At this time the following persons were initiated:

ACTIVE MEMBERS

Lilla M. Armstrong, Ph.B., Botany, H. S. Instructor in Science.

Wm. Frederick Bullock, A.B., Botany, Instructor in Science, Venice High School, Venice, California.

Joseph S. Butts, B.S., M.S., Biochemistry, Student in College of Medicine, Univ. of Southern California.

John S. Garth, Entomology, Student.

Ella M. Kennedy, A.B., M.A., Biology, Instructor in Science, Lincoln High School, Los Angeles.

Charles H. Oneal, M.A., Zoology, Instructor in Science, Franklin High School, Los Angeles.

Arthur L. Schultz, B.A., Zoology, Student in College of Medicine.

Fred C. Ziesenhenné, Zoology, Student.

HONORARY MEMBER

Dr. Bennett M. Allen, Professor of Zoology, University of California at Los Angeles.

N. ELLEN DENNING.

ALPHA BETA

Mount Union College

On the last Thursday evening in March, eleven persons were initiated into Alpha Beta Chapter as active members. D. E. Shoemaker, N. F. Bauhof, C. F. Beardmore, Fred Lembright, R. B. Hiltz, Chas. Rosenberg, Helen Pickard, H. F. Bichsel, M. L. Furcolow, C. R. Marlowe, M. C. Rich, were the initiates. These people are expected to care for the destiny of Alpha Beta next year in a capable manner.

The seniors of the Chapter are very much occupied at present, applying for admission to graduate and medical schools. J. L. Maple and M. L. Furcolow have been accepted at Vanderbilt University.

Alpha Beta is looking forward to the visit of Dr. A. I. Ortenburger, in the latter part of the month of April, with great anticipation.

F. O. ATCHLEY.

ALPHA GAMMA

University of South Dakota

Original Research Work of U. S. D. Phi Sigma Members in the Biochemistry Department.

A. J. Benesh: Absorption of B-azo-pyridine by the red blood corpuscles of the sheep. This is an M. A. thesis problem.

W. F. Schwartz: Absorption of pyridine by the red blood corpuscles of the sheep. Mr. Schwartz is a senior.

E. H. Shaw, Jr.: Mechanism of the toxicite of organic mercurial compounds to *Paramecium caudatum*. Doctor Shaw is head of the department.

In Bacteriology: Chas. A. Hunter—Microbic Dissociation of *Escherichia coli*. This is Professor Hunter's thesis problem for the Ph.D. at the University of Wisconsin.

In Zoology: Doctor Churchill and students are continuing study on Fishes of South Dakota.

In Botany: Doctor Abbott has been experimenting with A D C O, a commercial product.

Program of the meetings for the second semester:

March 17—Initiation Banquet: Address, "A Biologist—To Be or Not To Be The Student". Dr. Howard C. Abbott.

April 7—"Membranes"—Dr. E. H. Shaw, Jr.

"Ant Mounds"—Elinor Beadle.

May 5—"The Dissociation of *Escherichia coli*"—Professor C. A. Hunter.

"Primitive Microscope and the Discovery of Micro-Organisms"—Roger Reid.

May 19—"Permeability of Membranes by B-azo pyrimilim"—Alfred Benesh.

"Permeability of Membranes by Ammonia Salts"—Walter Schwartz.

May 24—Biological Foray at Swan Lake Conducted by Professor W. H. Over.

DONALD F. MILLER.

ALPHA DELTA

Lawrence College

The Lawrence College chapter of Phi Sigma Society is having a year of vigorous activity and growth. The programs have included the following papers: "A Summer at Lake Douglas Laboratory, Michigan", Carl Hoffman; "Botanical Lore", Helen Kavel; "Bird Banding", Harold Wilson; "The History of Anatomy", Albert Ogilvie; "The Science of Antiquity", Dr. A. H. Weston, Professor of Classical Languages.

At an open meeting that was largely attended by students in the Departments of Botany and Zoology Dr. A. H. Stovall, Director of the State Laboratory of Hygiene at Madison, gave a most interesting and instructive lecture on "Some Romances of Science".

Perhaps the outstanding occasion of the year was on March 15, when the famous film on "The Cultivation of Living Tissue", produced by Doctor Strangeways of Cambridge and Doctor Canti of London, was presented under the auspices of this chapter. This film was seen by a large number of students and professors from all departments of the college. About fifty physicians, representing the membership of the Outagamie Medical Society, and several physicians from adjoining counties, accepted and greatly appreciated the invitation to see this remarkable picture, which was obtained from the Department of Visual Instruction of the University of Kansas.

The following new members have been initiated during the year: Undergraduates: Mildred Bohn, '30; James Bradley, '31; Helen Kavel, '31; Helmi Peltoniemi, '31; Katherine Schwingel, '31; Elizabeth Smith, '31—Graduates: Theodore Christenson, Elmer Leavitt, Margaret Ritchie—Faculty: Olga Smith, Instructor in Botany.

The initiation banquet was held at the Conway Hotel, on March 18. The initiation ceremony was conducted and new members welcomed by Carl Hoffman, President. Albert Ogilvie, instructor in zoology, acted as toastmaster. A humorous skit on the "Life Cycle and the Ecological, Social and Other Relations of the Mosquito" was given by Harold Wilson, Curator of the Museum, and brief remarks were made by Professor Mullenix, of the Department of Zoology, and others.

MILDRED E. BOHN.

ALPHA EPSILON

University of Pittsburgh

An undertaking of Alpha Epsilon Chapter which I think may be of general interest is the maintenance of an annual three months scholarship to send one research student to the Marine Biological Laboratory at Woods Hole each summer. Unfortunately this scholarship can not cover all expenses as it is not endowed, but it is a considerable assistance and there are always plenty of applicants. It is provided by individual contributions from the members, which are not obligatory in any way, and for this reason, the fact that the enterprise has been successful in the past is gratifying and promising. Any student of the local group (not necessarily a member) whose research is known to the members may apply. A committee of the local chapter selects the one whose research seems most promising, or in whom for other reasons it seems likely that the money may be best invested. Last year Miss Minerva Magnhild Torvic was selected, and she spent the summer in Woods Hole working out the "Genetic Constitution of Biparental Males in *Habrobracon juglandis*". Miss Torvic took her M.S. at the University of Chicago under Doctor Allee, and is now working for her Ph.D. under Dr. P. W. Whiting of the University of Pittsburgh. She expects to receive this degree next February, and her work at Woods Hole will fulfill part of the requirements. Candidates for the coming summer are making application now. Woods Hole offers undeniable advantages for contacts as well as research, and the provision of this scholarship seems to us to be a very worthwhile undertaking for Phi Sigma. The constitution of the Society indicates that its purpose is to "promote interest in research in the Biological sciences", and perhaps this practical aid represents as forceful an encouragement and stimulus as is possible.

EDWARD MCCRADY, JR.

Installation of ALPHA ETA Chapter

Oklahoma A. and M. College, Stillwater, Oklahoma

Alpha Eta Chapter of Phi Sigma was installed at the Oklahoma Agricultural and Mechanical College, Stillwater, March 13, with twenty-five active members and twenty-three faculty members present. Dr. A. Richards (Omega), Head of the Zoology Department at the University of Oklahoma, was Installing Officer. The National President and National Secretary, with several other members of Omega Chapter, were present for the ceremonies.

This chapter of Phi Sigma was granted the Oklahoma A. and M. College on the petition of the local Biological Science Fraternity, Alpha Beta Kappa. Alpha Beta Kappa had functioned on the campus for several years as a Botany Club. Last fall it was reorganized to include all the Biological Sciences, in view of its petition for membership in Phi Sigma.

Credit for the success of the petition goes largely to the leadership of Professor Robert Stratton of the Botany Department, and Dr. J. C. Ireland of the Field Crops and Soils Department. Professor Stratton directed the preparation of the petition last spring. Since last September, he has been away on leave of absence, working on his Doctor's Degree at the University of Wisconsin, and Doctor Ireland has been sponsoring the activities of the club. The valuable cooperation of the entire faculty of the school has been instrumental in our success.

Alpha Eta's roll is made up of five graduate and twenty undergraduate students and twenty-three faculty members. We also have six members of other chapters on our faculty. They are: Professor R. O. Whitenton and Dr. Ora Smith of Mu (California) Chapter; Dr. H. J. Harper and Dr. L. E. Hawkins of Zeta (Wisconsin) Chapter; Professor C. E. Sanborn of Kappa (Kansas) Chapter; and Mr. George O. Moore of Omega (Oklahoma) Chapter. The membership comes from the School of Agriculture and the School of Science and Literature.

Our installation and initiation was held Thursday afternoon, March 13. The new ritual was used for the first time and proved very impressive in its simplicity. After the initiation, several members and visitors went out to the experiment station and observed some of the experiments of the Animal Husbandry and Poultry Departments.

At six o'clock in the evening, we reassembled for our Initiation Banquet. Dean C. H. McElroy of the School of Science and Literature acted as Toastmaster for the evening. Dr. A. Richards spoke on the aims and ideals of Phi Sigma. Other speakers on the program were: Ben Osborn, President of Alpha Eta Chapter; Professor C. E. Sanborn, Head of the Entomology Department and member of Kappa Chapter; Dean C. P. Blackwell of the School of Agriculture; and Mrs. Lois Bird, President of Omega Chapter. After the Banquet, Dr. Paul B. Sears of Oklahoma University, National President, gave a lecture on "The Biology of Pollen". Doctor Sears has done a great deal of work on pollen in the peat bogs of the Northern United States.

We were glad to have as our guests for the day, the following people: Dr. A. Richards, Dr. A. I. Ortenburger, Mrs. Roberta Ortenburger,

Dr. Charles N. Gould, Mrs. Lois Bird, Dr. Paul B. Sears, Dr. J. M. Thuringer, Miss Mildred Grosecruth, and Miss Kara Fullerton, all of the University of Oklahoma; Mr. John Shed of Guthrie, Oklahoma; and Mr. George Phillips, State Forester of Oklahoma City.

The Chapter takes this means of expressing its pleasure in becoming a member of Phi Sigma, and greets its sister chapters with high hopes of a successful career.

LYTLE BARNARD.

Installation of ALPHA ZETA Chapter

College of William and Mary, Williamsburg, Virginia

Alpha Zeta Chapter of Phi Sigma was formally installed at the College of William and Mary, April 19, 1930. Dr. A. I. Ortenburger, the National Secretary, was the Installing Officer. Dr. Paul A. Warren and Dr. A. F. Dolloff assisted. Doctor Warren will serve as Sponsor to the Chapter.

The officers of the chapter are: President—Wallace Hicks; Vice-President—Bernice Briggs; Secretary—Ann Messick; Treasurer—John C. Swanson.

The charter members are:—Margaret Bilisoly of Portsmouth, Va.; Margretta T. Blume of Hackensack, N. J.; Bernice Briggs of Williamsburg, Va.; Albert Cornell of Brooklyn, N. Y.; Dr. Donald W. Davis of the Biology Department of the College of William and Mary; Ralph De Falco of Brooklyn, N. Y.; Pansy Hawley of Bluefield, W. Va.; Wallace Hicks of Hampton, Va.; Mary E. Johnston of Tazewell, Va.; C. P. Jones, Jr. of Newport News, Va.; E. T. Justice of Chester, Va.; C. C. Kerns of Bloxom, Va.; C. A. Marciano, Jr. of Brooklyn, N. Y.; John Martin, Jr. of Blackstone, Va.; Ann Messick of Philadelphia, Pa.; Mary Florence Morscher of Clarendon, Va.; Arnold Motley of Rexburg, Va.; Mary Gladys Omohundro of Farmers Fork, Va.; Georgette Parker of Bedford, Va.; Walter A. Porter of Monorath, Va.; Leon N. Prince of Philadelphia, Pa.; Catherine Reynolds of Danville, Va.; Barnard Robbins of Brooklyn, N. Y.; Willie Lee Rogers of Freeman, Va.; Georgia Sherry of Richmond, Va.; Gene Shirley of Greenwood, Va.; Joseph Stainback of Alberta, Va.; Mrs. G. P. Strickler of Snell, Va.; John C. Swanson of Danville, Va.; Lucy Ann Gilmer Taylor of Richmond, Va.; Olive Wigglesworth of Mayre, Va.

Following the installation of Alpha Zeta a formal banquet was held at the Richard Bland Tea Room in Williamsburg. Guests at the banquet

included Dr. W. T. Hodges, Dr. R. G. Robb, Dr. W. G. Guy, and Dr. R. C. Young. Dr. Paul A. Warren acted as toastmaster. Doctor Ortenburger spoke on the aims and ideals of Phi Sigma saying that the foremost one was to stimulate research in the field of biology. The response was given by Wallace Hicks, President of the new Chapter. This was followed by an address of welcome to the new Chapter by the Dean of Men of the College of William and Mary, Doctor Hodges. Doctors Guy and Young made brief speeches as representatives of the Chemistry and Physics Departments. We then had a word from Miss Bilisoly who was active in the work of petitioning Phi Sigma.

The banquet was followed by an illustrated lecture given by Doctor Ortenburger on "Snakes and Snake Venoms".

Alpha Zeta received a number of letters and telegrams from the chapters of Phi Sigma. These were appreciated very much. We wish to extend a very cordial welcome to all members of Phi Sigma who may visit our campus.

We feel that it is a great honor and privilege to have a chapter at William and Mary and we hope that we will live up to the aims and ideals for which Phi Sigma stands.

ANN MESSICK.

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Copies of the Constitution. Not less than ten are to be ordered from the National Secretary (A. I. Ortenburger, Norman, Okla.) at a charge of five cents a copy.

Membership Record Blanks. Not less than twenty-five are to be ordered from the National Secretary at a charge of two cents each.

Membership Certificates are issued (no charge) by the National Secretary when the record blanks have been filled out, received, and their contents approved.

When sending initiation fees to the National Treasurer always send the serial number of the person for whom the fee is paid.

Order all keys direct from the L. G. Balfour Co., of Attleboro, Mass., through either the chapter Secretary or Treasurer. Accompany all orders with the name (plainly printed) of the person for whom the key is intended, the chapter to which he belongs and the date of his initiation.

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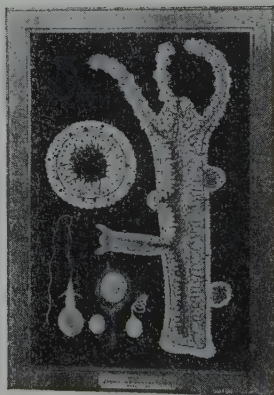
Those who are interested in a reliable model of the Hydra, accurate in detail and skillfully executed, will be glad to learn that we have prepared such a model.

The plaque shows in high relief (1) a sixteen inch longitudinal section of the hydra with well developed bud and sex organs, (2) a cross section four and one-half inches in diameter, (3) the large type of nematocyst within the cnidoblast cell before discharge and alone after discharge, and (4) the smaller grappling type of nematocyst.

Some important features of this model are:

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4. Gland cells are shown near the mouth.
5. The longitudinal section shows an amoeboid ovary and a well developed testis.
6. The muscular processes of the ectoderm cells are shown in the cross section; those of the ectoderm cells in the longitudinal section.

We shall be glad to have you write for descriptive circular.

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All Constitutional Amendments Passed

This is to inform officially all members of Phi Sigma that the constitutional amendments proposed by the National Council at its meetings on January 2 and 3 of this year, have all received the necessary affirmative vote of the several chapters and are now in effect.

All chapters should note that these changes effect Article IV, Sections 4 and 5 permitting faculty and honorary members the right to vote if they choose to pay regular dues; Article III has a new section added, Section 10 which reads, "Each chapter shall have the power to suspend members for failure to meet financial and other constitutional obligations as long as the delinquency exists"; Article II, Section 1, a new office, that of President (Honorary) is added to the group composing the National Council and the name of the office now called President is changed to Chancellor, the office now called Vice-President is changed to Vice-Chancellor; the Secretary and Treasurer remain as before.

Former National Secretary Reed

It will be of interest to members of Phi Sigma to know that Doctor C. I. Reed, former National Secretary, has published the preliminary results of an investigation which was made possible in part by a grant from our society. This article, "The Intravenous Administration of Irradiated Ergosterol" appeared in the *Proceedings of the Society for Experimental Biology and Medicine*, (1929, xxvii, pp. 187-188).

Chapter Secretaries

Will Chapter Secretaries elected this spring please notice the changes made on the page giving information relative to the ordering of membership record blanks and copies of the Constitution?

Hereafter no order for less than ten copies of the Constitution or twenty-five copies of the Membership Record Blanks will be accepted. The reason for this change being that in many cases postage will amount to nearly as much as the cost of forms if only a few are ordered.

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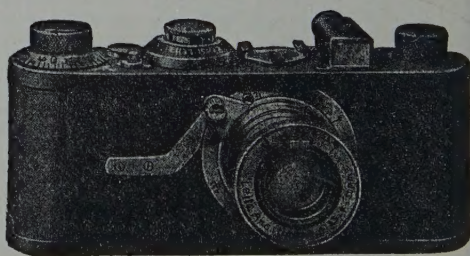
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